

WINDS.

The prevailing winds during June, 1889, are shown on chart ii by arrows flying with the wind. In New England and the lower lake region the winds were mostly from south to west; in the middle and south Atlantic states, the east and west Gulf states, southerly; in Florida and over the southeastern slope of the Rocky Mountains, south to east; in the Ohio Valley, south-east to southwest; in the upper lake region, extreme northwest, middle-eastern slope of the Rocky Mountains, southern and middle plateau regions, and the middle Pacific coast, variable; on the north Pacific coast, north to west; over the northern plateau region, west to southwest; on the north Pacific coast, westerly.

HIGH WINDS (in miles per hour).

Maximum velocities of fifty miles, or more, per hour, other than those given in the table of miscellaneous meteorological data, have been reported as follows: Fort Assiniboine, Mont., 52, sw., 24th; Fort Canby, Wash., 63, s., 27th.

LOCAL STORMS.

Destructive storms were most frequently reported in New York, where they were noted for eight dates; in Kansas for five dates; in Tennessee for four dates; in Dakota for three dates; in Texas, Indian Territory, Nebraska, Illinois, Iowa, Missouri, and Wisconsin for two dates; and in Georgia, Massachusetts, New Hampshire, Vermont, Colorado, New Jersey, Indiana, Pennsylvania, West Virginia, Minnesota, and Ohio for one date. In states and territories other than those named storms of unusual severity have not been reported. The storms reported were noted in the greatest number of states and territories, five, on the 17th and 20th; on the first named date they occurred in Texas, New York, Missouri, Dakota, and New Jersey, and on the 20th in Indian Territory, Kansas, Iowa, Missouri, and Dakota. On the 3d, 5th, 7th, 10th, 11th, and 19th they were reported in three states or territories; in two on the 14th, 15th, 16th, 21st, 26th, 27th, and 28th; and in one on the 8th, 9th, 22d. For dates other than those named no destructive storms have been reported, save those of the beginning of the month in the Middle States, which have been made the subject of a special report.

The following are descriptions of the storms above referred to. These storms generally attended the passage of areas of low pressure traced on chart i and discussed under the heading, "Areas of low pressure:"

3d. Texas.—Denton, Denton Co.: a very heavy rain fell in the evening, doing considerable damage to the wheat crop. The heaviest rain covered a district running from the north-western part of the county in a southeasterly direction. The water gathered in floods and in many places it was higher than ever known before. A very heavy hail accompanied the severest part of the rain. Reports from some parts of this county, especially from Roanoke, are that the hail almost entirely ruined crops of all kinds. Alvord, Wise Co.: a drenching rain and severe hail-storm occurred in the evening. Corn and vegetables were riddled by the hail, and some trees were blown down. Gainesville, Cooke Co.: the heaviest wind and rain-storm of the season visited this section during the evening. Great damage to crops is reported throughout this county, and also in the Chickasaw nation. Between Krum and Justin stations, a few miles south of this city, on the Santa Fé Railroad, nine hundred feet of track were washed away. At Purcell, Ind. T., and points north, the storm was very severe, accompanied by heavy hail which fell in large quantities doing much damage to crops. Grape Vine, Tarrant Co.: a heavy wind, hail, and rain-storm passed over this section at 10 p. m., doing immense damage to crops. Corn and cotton were riddled by the hail, while wheat and oats were blown down. The damage all around is very heavy. Granbury, Hood Co.: the most damaging wind and hail-storm that has ever been experienced at this place occurred in the evening. The storm gathered about one mile northeast of

this place, and moved in a southwesterly direction, demolishing gardens and crops in its path. The Christian church, a new structure, was twisted about ninety feet out of its natural position. About fifteen hundred window glasses were broken by hail-stones, the stones being as large as hens' eggs. The path of the storm was about one mile wide. Wichita Falls, Wichita Co.: the rain and hail-storm in the evening was the heaviest known in this county; several houses were unroofed and other damage done. Reports from the surrounding country state that the crop is ruined, while wheat and oats are severely damaged. *The Dallas (Texas) Morning News, June 5.* Mesquite, Dallas Co.: a severe wind, rain, and hail-storm, moving from southwest to northeast, began at 6.15 p. m. The hail-stones were mostly large, some of them being of enormous size; all of them were of a ragged appearance and of an almost infinite variety of shapes. The larger stones having protuberances one inch long. Reports show that the path of the hail-storm was about eight hundred yards wide, and about one mile from the east to the west edge. Its duration was about ten minutes, and the wind and rain-storm lasted about twenty minutes. The hail measured about four inches deep on a level, and about two feet in hollows. At 11 a. m. the following day the hail was about eighteen or twenty inches deep in a field four miles northeast of this place. All crops in the path of the storm were ruined, scarcely a vestige of the corn and cotton crops was left. The wind was very destructive to buildings, some being blown down and others removed from their foundations, but no lives were lost.—*Report of Silas G. Lackey. Indian Territory.*—Fort Sill: a severe thunder-storm, passing from north to south, occurred between 8.10 p. m. and 11.50 p. m. The storm was accompanied by light rain and high wind, the wind reaching a maximum velocity of eighty miles per hour, and causing considerable damage to fences, outbuildings, etc. *Tennessee.*—Gallatin, Sumner Co.: a heavy rain-storm, accompanied by wind and hail, occurred during the day. Within less than twenty minutes nearly one inch of rain fell. The wheat and corn crops were damaged to a considerable extent by hail, and a number of trees were uprooted by the wind.—*The Nashville, Tennessee, Banner, June 4.*

5th. Georgia.—Way Cross, Ware Co.: a violent storm, moving from southwest to northeast, occurred during the day about one mile north of this place. Hail-stones as large as goose eggs fell in large quantities. Considerable damage was done to crops, fencing, etc. At one plantation the corn and cotton crops were entirely destroyed.—*The Savannah, Ga., Morning News, June 6.*

6th. Kansas.—Dodge City: a light thunder-storm, moving from southeast to northwest, accompanied by rain and large hail, occurred between 5.10 p. m. and 5.45 p. m. The fall of hail at this place was of short duration but some of the hail-stones were as large as hens' eggs. The general shape was spheroidal, the larger ones having knobby protuberances, and when broken in half the sections presented a core resembling half-melted snow, around which were irregular coatings of ice. Reports show that the hail-storm was more severe in the surrounding country, where poultry was killed, window lights broken, and crops damaged. *Nebraska.*—North Platte: a severe thunder-storm began at 7 p. m., accompanied by vivid lightning, heavy rain, high wind, and hail; hail-stones of about two inches in diameter fell. The hail ended at 7.25 p. m., but the rain and thunder continued until 10.50 p. m. The wind attained a velocity of eighty miles per hour for two minutes, and of sixty miles per hour for seven minutes. Several dwellings, stables, barns, telegraph wires, and chimneys were prostrated by the wind. The damage in this city is estimated at \$5,000. It is reported that from four to ten miles south of the city hail-stones of unusual size fell, and that the crops in the path of the storm suffered serious injury. The damage to crops is estimated at \$2,500.

7th. Illinois.—Monmouth, Warren Co.: a whirlwind, high in the air, passed over the southern part of this county in the afternoon accompanied by a severe hailstorm. Many buildings, fences, and trees were destroyed. The country was flooded. Monticello, Piatt Co.: a terrific rain storm visited this county late in the evening and continued until the following day. All streams overflowed. The Sangamon River is out of its banks and rising one foot an hour, sweeping every thing before it. In the bottoms there are hundreds of acres of corn under water, and much will be destroyed.—*The Chicago, Ill. Tribune, June 9.* Iowa.—Boone, Boone Co.: the heaviest storm in this section since the flood of 1881 occurred during the night and morning. The creeks and water courses are full, and two slight washouts occurred. During the height of the storm the rain changed to hail for half an hour, which did some damage to crops.—*The Nashville, Tenn., Banner, June 8.* Kansas.—Andale, Sedgwick Co.: a hail storm, accompanied by light wind and rain, occurred at 5 p. m. Hail-stones measuring from seven to eight inches in circumference fell, causing slight damage to wheat and breaking about one-fourth of the exposed window panes. The track of the storm was about five miles wide and fourteen miles long.—*Report of Leon Fouquet, Postmaster.* Atkin, Graham Co.: a severe storm set in at 5.30 p. m. It approached with a roaring noise which was distinctly heard two or three minutes before it struck this place. Hail fell from its commencement and continued for about ten minutes; most of the hail-stones being as large as a half dollar silver piece, and about one-half or five-eighths inch thick, rounded off at the edges, and every stone examined had a star about the centre, on the flat side, as if struck by a bullet. Crops, houses, barns, and trees in the path of the storm sustained serious damage.—*Report of Mr. Ed. Atkin, C. E.* Wakefield, Clay Co.: a hail-storm, the severest on record, passed over the southern portion of this county at 9.45 p. m. Many hail-stones were over one inch in diameter, and they destroyed crops of all kinds, the damage varying in different localities from 10 to 100 per cent. The rain fell so rapidly that the fields immediately became flooded. Hail in quantities remained in the ravines three days after the storm had passed.—*Report of Wm. P. Cochran to the Kansas State Weather Service.* Wichita, Sedgwick Co.: this section was visited during the day by a very severe storm. The western part of this county and the eastern portion of Kingman county suffered most. The storm swept over an area twenty miles long and five miles wide. The heavy rain was followed by hail which laid low the grain and fruit crops. In Westick county many houses and barns and acres of crops were levelled to the ground. One farmer and his family were killed and many others rendered homeless.—*The Nashville, Tenn., Banner, June 8.*

8th. Illinois.—Bloomington, McLean Co.: a disastrous storm passed over this section in the evening and the rain continued until 9 a. m. the following day. The wind and hail did much damage, and on the bottom lands, along the Mackinaw River, the corn has been washed out. At Lilly, Tazewell Co., sixteen miles west of this city, a church was demolished, trees, fences, and buildings badly wrecked, and several box-cars were blown from the track. In Tazewell and Woodford counties, the Lake Erie and Western Railroad track is under water for many miles.—*Chicago, Ill., Journal, June 8.*

9th. New York.—Oswego: a thunder-storm set in at 2.30 p. m., accompanied by hail at 2.40 p. m., which lasted about five minutes. Most of the hail-stones were from one-half to three-quarter inch in diameter, and from one-quarter to one-half inch in thickness, and their general shape was similar to that of pebbles most of them had a white nucleus, varying from one-quarter to one-half inch in diameter, surrounded by perfectly clear ice. A few very large stones were found, measuring one-and-a-half inch by one inch; they were of clear ice, very irregular in formation, and resembled the fragments of icicles. The storm moved from southwest to northeast, and ended about 3 p. m. Rain occurred from the beginning to the ending of the storm. Another thunder-storm accompanied

by rain, passing from north-northwest to east, occurred between 3.30 p. m. and 4.30 p. m. Rochester: two thunderstorms, about thirty minutes apart, passed over this city during the afternoon. The second storm, which lasted about one hour, was the more severe, and considerable damage was caused by the heavy rain and hail in the southeastern portion of the city and suburban districts. No hail fell at station. The hail-storm, which lasted from five to ten minutes, covered a strip 1,500 feet wide, and the hail-stones were about the size of walnuts, causing much damage to hot house plants, shrubbery, small fruits, etc. Several residences in the city were struck by lightning, but the damage done was small. Turin, Lewis Co.: the worst storm that ever occurred in this section set in at 5 p. m. and lasted a short time. The storm approached as a thick, black, whirling cloud, which almost touched the ground, levelling fences and large trees in its path. A large barn, when struck by the storm, was scattered in fragments, scarcely leaving a whole timber on the place. Much damage resulted to other property. In some places the earth was scooped out as though it had been shoveled. Reports from Leyden, Port Leyden, West Leyden, West Turin, Martinsburgh, Lyonsdale, High Market, Osceola, and Constableville, this county, state that the storm at those places was the most destructive ever known.—*Turin, N. Y., Leader, June 12.*

10th. Massachusetts.—Holyoke, Hampden Co.: the storm which occurred between 8 p. m. and 9 p. m. caused extensive washouts in the canal at this place. A bridge across the canal was also wrecked. Loss, \$100,000.—*Rochester, N. Y., Herald, June 12.* New Hampshire.—Dover, Strafford Co.: the storm which passed over this section during the day was very destructive. At South Bennick the academy was struck by lightning. All of the three hundred and fifty pupils were affected by the electricity, and three were prostrated.—*Rochester, N. Y., Herald, June 12.* Tennessee.—Chattanooga: a severe thunder-storm, accompanied by brilliant lightning, began 12.15 p. m. and lasted about twenty minutes. Rain fell from 6.18 p. m. to 6.27 p. m., during which time 0.48 inch was recorded. The wind attained a maximum velocity of thirty-six miles per hour from the northwest at 6.18 p. m. No damage was done in this city, except the uprooting of trees, etc.

11th. New York.—New York City: a thunder storm, moving from west to east, began 5.10 p. m. and ended 5.30 p. m.; the storm was accompanied by terrific thunder, brilliant lightning, and high southerly winds. Unusually heavy rain occurred from 5.20 p. m. to 5.26 p. m. during which time 0.25 inch fell. Several houses in Brooklyn were blown down. One house in the eastern part in this city was unroofed and then collapsed, killing two men and wounding several others. Tennessee.—Jonesborough, Washington Co.: this section was visited at 3 p. m. by a severe wind, rain, and hail-storm. Reports from the country, three miles north of this place, state that great damage was done by the hail to growing crops. In many places the fruit was beaten off the trees.—*Knoxville, Tenn., Daily Journal, June 11.* Vermont.—Saint Albans, Franklin Co.: reports from all over the county show that a large amount of damage was done by the storm of last night. Six bridges were carried away, and the loss to farmers is very heavy.—*Rochester, N. Y., Herald, June 12.*

14th. Colorado.—Denver: the rain storm which occurred in the afternoon was the severest known here for the last twenty-four years. In the northern portion of the city the streets and cellars were flooded. The brick-yards suffered great loss, nearly all the new brick being destroyed.—*Denver, Colo., Republican, June 15.* Tennessee.—Knoxville: the rainfall in the Tennessee Valley during the past few days has been very heavy, and in some respects almost without precedent. The precipitation has been unusually violent and has caused great damage. Reports state that a big washout occurred near Abingdon, Va., in which a bridge on the Norfolk and Western Railroad and three hundred feet of track were swept away. Between Bridgeport and Newport, on the North Caro-

lina division, a large embankment was torn away by the waters.—*Knoxville, Tenn., Daily Journal, June 14.*

15th. New York.—New York City: a severe thunder-storm, passing from southwest to northeast, prevailed in the afternoon and evening. It was accompanied by brilliant lightning, particularly about 4 p. m. Four church-steeple were struck by lightning and partially destroyed. Two dangerous fires were started in Jersey City, damage \$40,000.

15-16th. Kansas.—La Harpe, Allen Co.: the thunder-storms which occurred on these dates were accompanied by unusually heavy rain, causing the streams to rise higher, in a shorter time, than has been known for years. Railroad and highway bridges, culverts, etc., were carried away by the flood, and much damage was done to the growing crops along the streams.—*Report of Mr. Isaac S. Coe.*

16th. Indiana.—Crawfordsville, Montgomery Co.: a destructive storm visited the southeastern portion of this township during the evening. It extended over an area ten miles long and one mile wide, and ended in a regular cloud-burst. The damage to property was great, fences and bridges being washed away and barns torn down. Growing crops were badly damaged.—*Union and Advertiser, Rochester, N. Y., June 18.*

New York.—Canajoharie, Montgomery Co.: a severe rain and hail-storm occurred in the Mohawk Valley this afternoon. Small washouts are reported at various points along the West Shore Railroad.—*Democrat and Chronicle, Rochester, N. Y., June 17.*

16-17th. New York.—Dansville, Livingston Co.: rain began at 8 p. m. 16th, and continued twelve hours, swelling the waters of Canaseraga Creek over its banks, and creating havoc and destruction throughout the valley. Three miles south of here the road is completely obliterated for over a mile. At Cridler's dam the new iron bridge has settled to the bed of the creek. Farms and roads in the vicinity of the creek are inundated. The damage done is great and will be felt severely, as the majority of the farmers had just finished replanting crops that were swept away by the recent flood of May 31st—June 1st.—*Post-Express, Rochester, N. Y., June 17.*

17th. Missouri.—Springfield: a thunder-storm, moving from southwest to northeast, occurred between 12.20 p. m. and 1 p. m. The storm was accompanied by excessive rain from 11 a. m. to 11.08 a. m., during which time 0.55 inch fell.
Texas.—Bonham, Fannin Co.: a storm struck this county in the evening about fifteen miles from this place, travelled in a northeasterly direction, and passed three miles south of this town. Many houses in the country were wrecked, and others twisted and badly damaged. Trees and growing crops in its path were levelled.—*Express, San Antonio, Texas, June 20.*

18th. Dakota.—Watertown, Coddington Co.: the heaviest rainfall for years occurred this afternoon. For over two hours the rain poured in torrents, flooding cellars, and causing much damage.—*Denver, Colo., Times, June 18. New Jersey.*—Long Branch: during a severe thunder-storm, late in the evening, the spire of the Sea Side chapel was struck by lightning and badly damaged. Trees were blown down and crops injured to a considerable extent throughout the surrounding country.—*Post-Express, Rochester, N. Y., June 19.*

19th. Indiana.—La Fayette: a heavy wind storm struck this city in the afternoon, doing considerable damage at the car works and wrecking a number of dwellings. The wind storm was followed by a severe shower of rain. The loss outside of the city is considerable, barns, orchards, wheat, and oats being levelled to the ground.—*Union and Advertiser, Rochester, N. Y., June 20. Nebraska.*—Bingham, Sheridan Co.: this section was visited in the evening by a severe thunder-storm, accompanied by large hail. The storm was very destructive forty miles west of this place, where hail-stones of about four inches in diameter fell, causing much damage to crops and property.—*Report of Mr. W. C. Wood.*

19-20th. Dakota.—Yankton: a thunder-storm, accompanied by high wind and heavy rain, passed over this city during the night. The wind attained a maximum velocity of fifty-

two miles per hour at 1.25 a. m., 20th, and caused some damage to buildings, prostrated fences, etc.

20th. Indian Territory.—Guthrie, Oklahoma Co.: a thunder-storm, accompanied by high wind, hail, lightning, and torrents of rain, passed over this place at 6 p. m. The storm struck this city with great violence, unroofing many houses, and moving others from their foundations. Several hundred houses in course of erection suffered serious injury.—*Globe-Democrat, Saint Louis, Mo., June 21. Missouri.*—Albany, Gentry Co.: a destructive storm passed over the northwestern portion of this state in the afternoon, demolishing a number of dwellings, school houses, and other property, and killing one child.—*The Daily Gate City, Keokuk, Iowa, June 22. Parnell, Andrew Co.:* this section was visited by a severe wind storm at 1 p. m. The storm demolished out-houses and small buildings, scattering the debris in every direction. Reports show that the storm was very severe about one mile west of this place, where eighteen houses were either blown down or moved from their foundations, and a great many people were seriously injured. The storm moved from northwest to southeast.—*Parnell, Mo., Express, June 20. Dakota.*—Vermillion, Clay Co.: a heavy wind storm struck this place during the morning, doing considerable damage. A large residence, the Catholic church, and a building on the fair grounds were totally wrecked, and several houses were moved from their foundations or otherwise damaged.—*Denver, Colo., News, June 21. Iowa.*—Sioux City, Woodbury Co.: this city and surrounding region was visited this morning by a damaging rain and wind storm. The pontoon bridge across the Missouri River was blown to pieces, and sixty boats were swept down the stream. Reports from many points in northern Nebraska and southwestern Dakota show that great damage was done by the storm, which covered a wide scope of country.—*The Herald, Rochester, N. Y., June 21. Kansas.*—Leavenworth: a severe thunder-storm, accompanied by heavy rain and almost continuous loud claps of thunder, occurred between 4.20 p. m. and 5.30 p. m. Several barns and houses were struck by lightning. Damage estimated at \$1,000.

21st. New York.—South Canisteo, Steuben Co.: a severe thunder-storm accompanied by heavy rain, and in some places by hail, occurred between 1.35 p. m. and 6.30 p. m. Several persons were prostrated during the storm, which fact the physicians ascribe to the excessive electrical conditions. Heavy rain caused the Canisteo River, above Hornellsville, this county, to rise one foot in three minutes.—*Report of Mr. J. E. Wilson. Pennsylvania.*—Scranton, Lackawanna Co.: a terrific thunder-storm passed over here this evening, doing much damage. Lightning struck and burned several houses and killed one child.—*Democrat and Chronicle, Rochester, N. Y., June 22.*

22d. West Virginia.—Clarksburgh, Harrison Co.: a cloud-burst which occurred at Mount Clare, this county, yesterday, was followed this morning by heavy rains. The West Fork and Elk rivers are both overflowing their banks for miles, and heavy damage is being done to property. The track of the Clarksburgh and Weston Railroad is under water and traffic is suspended.—*Chronicle-Telegraph, Pittsburgh, Pa., June 22.*

26th. Minnesota.—Rushford, Fillmore Co.: a severe storm occurred between 10 a. m. and 3 p. m. The storm gathered near or over the town of Wiscoy, Winona Co., and passed through Houston county, then due south, curving slightly to the west through Yukatan and the eastern portion of Norway, Fillmore Co. A belt two miles wide and thirty miles long was absolutely laid waste. Trees two feet in diameter were twisted off or uprooted by the wind. For two miles the hail pelted all growing crops and vegetation to the ground. It is reported that hail-stones as large as a man's fist fell. On the Southern Minnesota Railroad about two hundred feet of track was covered with a drift of sand about three feet in depth, and one bridge was partly washed away.—*Rushford, Minn., Star, 27. Wisconsin.*—Racine, Racine Co.: an electric storm passed over this city during the night and was the severest

known here for years. Thirteen barns and houses were damaged by lightning, and about one hundred cellars and basements were flooded. Growing crops throughout the country were seriously damaged.—*Union and Advertiser, Rochester, N. Y., 28.*

27th. New York.—Watertown, Jefferson Co.: rain fell in torrents in several parts of this county and northern New York during yesterday and last night. There were no trains on the Cape Vincent branch of the Rome, Watertown, and Ogdensburgh Railroad this morning, on account of a serious washout two miles west of Chaumont. Redwood and Sacket's Harbor, both in this county, are flooded. The midnight freight on the Utica and Black River division of the Rome, Watertown, and Ogdensburgh Railroad, ran into a washout at Redwood last night and was wrecked.—*Union and Advertiser, Rochester, N. Y., June 27.* Wisconsin.—Waukesha, Waukesha Co.: a very severe rain and thunder-storm occurred during the night. The rainfall was unusually heavy and caused considerable damage to growing crops.—*Milwaukee, Wis., Journal, June 27.*

28th. New York.—Schenectady, Schenectady Co.: during

a terrific thunder-storm in the afternoon a cloud-burst occurred over the town of Princetown, about six miles southwest of this city, doing great damage. Acres of crops were washed away and a number of head of stock were drowned. The roads at Rotterdam, an adjoining town, were covered with a foot and a half of water, and many bridges were carried away.—*Union and Advertiser, Rochester, N. Y., June 29.* Ohio.—Akron, Summit Co.: between 12.15 p. m. and 1 p. m. this city was deluged by a cloud-burst; two inches of rain fell in forty-five minutes, as indicated by the Buchtel College observatory gauge. The railroad tracks were heaped with earth several feet deep and trains were delayed. At Tallmadge, this county, a large section of the New York, Pennsylvania, and Ohio tracks was washed out, and trains were blockaded. The stores in the lower portion of the city were flooded and the streets were running streams. In South Akron a house floated off its foundation, telegraph poles were shattered by lightning, and reports from the country show that the recent excessive rains caused great damage to crops.—*Pittsburgh, Pa., Post, June 29.*

INLAND NAVIGATION.

STAGE OF WATER IN RIVERS AND HARBORS.

The following table shows the danger-points at the various stations; the highest and lowest water for June, 1889, with the dates of occurrence and the monthly ranges:

Heights of rivers above low-water mark, June, 1889 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
<i>Red River:</i>						
Shreveport, La.....	29.9	22, 23	16.0	12	8.7	7.3
<i>Arkansas River:</i>						
Fort Smith, Ark....	22.0	23	14.8	13	5.4	9.4
Little Rock, Ark....	23.0	25, 26	15.9	15	7.2	8.7
<i>Missouri River:</i>						
Fort Buford, Dak....	19	9.4	1	7.0	2.4
Omaha, Nebr.....	18.0	12, 21	9.6	2, 3	7.0	2.6
Leavenworth, Kans...	20.0	24	11.8	9	7.2	4.6
Kansas City, Mo....	21.0	20, 21	12.0	4, 5, 6	9.8	2.2
<i>Mississippi River:</i>						
Saint Paul, Minn....	14.5	1	3.5	16	2.2	1.3
La Crosse, Wis....	24.0	1	5.8	18, 19	3.9	1.9
Dubuque, Iowa....	16.0	1	7.1	26, 27, 28	4.3	2.8
Davenport, Iowa....	15.0	1, 2	5.1	28, 29, 30	3.1	2.0
Keokuk, Iowa....	14.0	8	6.8	30	3.5	3.3
Saint Louis, Mo....	32.0	1	24.4	8	13.7	10.7
Cairo, Ill.....	40.0	24	34.5	1	20.5	14.0
Memphis, Tenn....	34.0	27	27.7	2	14.4	13.3
Vicksburg, Miss....	41.0	30	33.4	5	19.2	14.2
New Orleans, La....	13.0	30	10.5	1	4.9	5.6
<i>Ohio River:</i>						
Pittsburgh, Pa....	22.0	1	24.0	27	5.4	18.6
Parkersburg, W. Va.	38.0	3	23.8	29	7.6	16.2
Cincinnati, Ohio....	50.0	6	33.6	1	15.4	18.2
Louisville, Ky....	25.0	6, 7	11.8	2	7.7	4.1
<i>Cumberland River:</i>						
Nashville, Tenn....	40.0	21	25.9	1	4.8	21.1
<i>Tennessee River:</i>						
Chattanooga, Tenn.	33.0	3	12.4	29	3.9	8.5
<i>Monongahela River:</i>						
Pittsburgh, Pa....	29.0	1	24.0	27	5.4	18.6
<i>Savannah River:</i>						
Augusta, Ga.....	32.0	30	14.5	27, 28	6.7	7.8
<i>Willamette River:</i>						
Portland, Oregon..	15.0	3, 4	8.7	24, 28	5.8	2.9

Tennessee River.—Chattanooga, Tenn.: driftwood in river, 2d to 5th, 16th, 17th, 18th.

Mississippi River.—Keokuk, Iowa: driftwood in river, 8th.

FLOODS.

The destructive floods which occurred in sections of the Middle States at the beginning of the month have been made the subject of a special report in this and the preceding issue of the REVIEW. These floods were the immediate result of the excessive rainfall in those sections of the last two days of May, which found the rivers and streams of the Middle States with high stages of water, and the land of the drainage areas saturated, as a result of the abnormally heavy and persistent

rains of the preceding two months, which in the middle Atlantic states averaged 70 per cent. above the normal amount for April and May. The destructive features of the flood at Johnstown, Pa., were due almost entirely to the water liberated by the breaking of the dam on the South Fork.

Tuscola, Douglas Co., Ill., 8th: there is a heavy flood in central Illinois, and streams are higher than ever known before. While the damage to crops in this vicinity is not great, reports from Chrisman and Hume, Edgar Co., and other points along the Indianapolis, Decatur and Springfield Railway, are to the effect that thousands of acres of corn, oats, and wheat are under water. A serious washout occurred on the Chicago and Eastern Illinois Railway at Grape Creek, Vermillion Co., and all freight trains are temporarily abandoned.—*Chicago, Ill., Tribune, June 9.*

Newaygo, Newaygo Co., Mich., 11th: the village of Croton, this county, eight miles from this city, is completely inundated by the back water from the jam of logs in the Muskegon River. The pressure against the piers is so great that the bridge is unsafe, and communication is cut off.—*Union and Advertiser, Rochester, N. Y., June 11.*

Indianapolis, Ind., 11th: although no rain has fallen during the last twenty-four hours, White River and other Indiana streams continue to rise. Thousands of acres of farm land are under water and the damage to crops and property is high in the thousands. Several bridges have been carried away in the southern part of the state. The Vandalia line is transferring its passengers near Plainfield, and trains over other lines west and south are running irregularly. In Owen county 2,500 acres of crops are under water, and in Morgan, Bartholomew, Clay, and Greene counties it is estimated that over 10,000 acres are inundated.—*The Oswego, N. Y., Palladium, June 11.*

Decatur, Macon Co., Ill., 12th: the sudden high water in the Sangamon River has done great damage to bottom land crops, and has broken through four levees and overflowed bottoms for miles.—*The Oswego, N. Y., Palladium, June 12.*

Vincennes, Knox Co., Ind., 15th: the June floods have worked disaster to the farmers of southern Indiana who have crops in the bottom lands. The White River has washed out thousands of acres of corn and wheat, and farmers have been compelled to move their families and live stock to high ground. The damage to southern Indiana and Illinois, along White and Wabash rivers, will amount to many thousands of dollars.—*The Oswego, N. Y., Palladium, June 15.*

Erie, Pa.: the heavy rain which began 3.55 p. m., 16th, ended at 10 a. m. the following day, during which time 3.13 inches of rain fell, causing the streams in this section to rise higher than ever known before. Several washouts occurred